

AMENDMENTS TO THE CLAIMS

1-21. (Canceled)

22. (New) A method for producing oligosaccharides having a low degree of polymerization, comprising the steps of:

(a) selecting a gene which codes for a fructosyltransferase enzyme which converts sucrose into an oligosaccharide having a low degree of polymerization;

(b) linking the gene to suitable transcription-initiation and transcription-termination signals to provide an expression construct;

(c) transforming a plant cell from a mutant plant having an altered starch or sucrose metabolism with the expression construct;

(d) regenerating a transgenic plant from the transformed plant cell;

(e) culturing the transgenic plant under conditions enabling the expression and activity of the fructosyltransferase enzyme; and

(f) isolating the oligosaccharides from the transgenic plant.

23. (New) The method of Claim 22, wherein the mutant plant having an altered starch or sucrose metabolism is naturally occurring.

24. (New) The method of Claim 22, wherein the mutant plant having an altered starch or sucrose metabolism has been modified by means of molecular and genetic techniques.

25. (New) A DNA construct for expressing a fructosyltransferase enzyme which converts sucrose into an oligosaccharide having a low degree of polymerization in a plant or plant cell, comprising a gene of vegetable origin which codes for a fructosyltransferase enzyme, wherein the gene is mutated so that the resultant oligosaccharide has a low degree of polymerization, coupled in reading frame to plant-specific transcription-initiation and termination signals.

26. (New) The DNA construct of Claim 25, wherein the fructosyltransferase enzyme comprises an amino acid sequence selected from the group of SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, and SEQ ID NO:10.

27. (New) A transgenic plant cell, comprising the DNA construct of Claim 25.

28. (New) A transgenic plant, originating from a transgenic plant cell as claimed in Claim 27.

29. (New) Transgenic plant tissue originating from a plant wherein the plant is produced by regeneration from a transgenic plant cell as claimed in Claim 27.

30. (New) A method for producing oligosaccharides having a low degree of polymerization, comprising the steps of:

(a) selecting a gene which codes for a fructosyltransferase enzyme which converts sucrose into an oligosaccharide;

(b) mutating the gene so that the resultant oligosaccharide has a low degree of polymerization;

(c) linking the mutated gene to suitable transcription-initiation and transcription-termination signals in order to provide an expression construct;

(d) transforming a suitable plant cell with the expression construct;

(e) regenerating a transgenic plant from the transformed plant cell.

31. (New) A method for producing food products comprising oligosaccharides having a low degree of polymerization as a sugar substitute, comprising the steps of:

(a) selecting a gene which codes for fructosyltransferase enzyme which converts sucrose into an oligosaccharide having a low degree of polymerization;

- (b) linking the gene to suitable transcription-initiation and transcription-termination signals to provide an expression product;
- (c) transforming a plant cell from a mutant plant having an altered starch or sucrose metabolism with the expression construct;
- (d) regenerating a transgenic plant from the transformed plant cell;
- (e) culturing the transgenic plant under conditions enabling the expression and activity of the fructosyltransferase enzyme;
- (f) isolating the oligosaccharides from the transgenic plant; and
- (g) incorporating the oligosaccharides as a sugar substitute into the food products.

32. (New) A method for producing food products comprising oligosaccharides having a low degree of polymerization as nutritional fiber, comprising the steps of:

- (a) selecting a gene which codes for fructosyltransferase enzyme which converts sucrose into an oligosaccharide having a low degree of polymerization;
- (b) linking the gene to suitable transcription-initiation and transcription-termination signals to provide an expression product;
- (c) transforming a plant cell from a mutant plant having an altered starch or sucrose metabolism with the expression construct;
- (d) regenerating a transgenic plant from the transformed plant cell;
- (e) culturing the transgenic plant under conditions enabling the expression and activity of the fructosyltransferase enzyme;
- (f) isolating the oligosaccharides from the transgenic plant; and
- (g) incorporating the oligosaccharides as nutritional fiber into the food products.

33. (New) A method for producing food products comprising oligosaccharides having a low degree of polymerization as a bifidogenic agent, comprising the steps of:

- (a) selecting a gene which codes for fructosyltransferase enzyme which converts sucrose into an oligosaccharide having a low degree of polymerization;
- (b) linking the gene to suitable transcription-initiation and transcription-termination signals to provide an expression product;
- (c) transforming a plant cell from a mutant plant having an altered starch or sucrose metabolism with the expression construct;
- (d) regenerating a transgenic plant from the transformed plant cell;
- (e) culturing the transgenic plant under conditions enabling the expression and activity of the fructosyltransferase enzyme;
- (f) isolating the oligosaccharides from the transgenic plant; and
- (g) incorporating the oligosaccharides as a bifidogenic agent into the food products.

34. (New) A method for producing animal feed comprising oligosaccharides having a low degree of polymerization as a bifidogenic agent, comprising the steps of:

- (a) selecting a gene which codes for fructosyltransferase enzyme which converts sucrose into an oligosaccharide having a low degree of polymerization;
- (b) linking the gene to suitable transcription-initiation and transcription-termination signals to provide an expression product;
- (c) transforming a plant cell from a mutant plant having an altered starch or sucrose metabolism with the expression construct;
- (d) regenerating a transgenic plant from the transformed plant cell;
- (e) culturing the transgenic plant under conditions enabling the expression and activity of the fructosyltransferase enzyme;
- (f) isolating the oligosaccharides from the transgenic plant; and
- (g) incorporating the oligosaccharides as a bifidogenic agent in the animal feed.